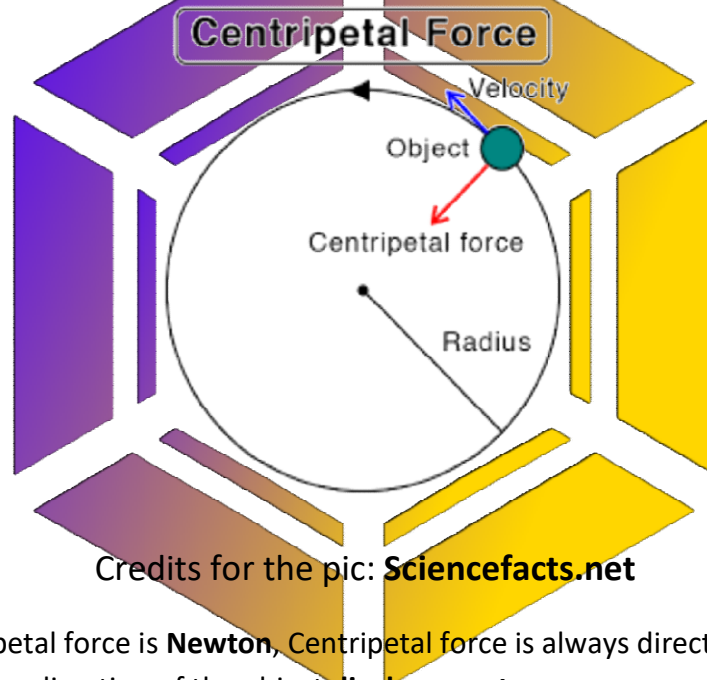

CENTRIPETAL FORCE

The word 'Centripetal' is derived from the Latin words "Centrum" and "petere" meaning **seeking towards the centre**. Centripetal force is a **virtual force**.

Consider Hammer Throw, in which the **force acting inwards** is caused by the **tension** generated in the rope. But we are considering it as a force for our comfort.



Credits for the pic: Sciencefacts.net

The unit of Centripetal force is **Newton**, Centripetal force is always directed **perpendicular** (Tangentially) to the direction of the object **displacement**.

Formula for Centripetal force is,

$$F_c = m \frac{v^2}{r} \text{ and } v = \frac{2\pi r}{T}, \text{ so}$$
$$F_c = m \frac{\left(\frac{2\pi r}{T}\right)^2}{r}$$
$$= m \frac{4\pi^2 r}{T^2}$$

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(as the object is under **angular motion** the term 'v' can be written as 'ω', **omega** which equals $2\pi/T$). In cases like Moon revolving around the Earth, **Gravitational force** acts as the **Centripetal force**.

THANK YOU
